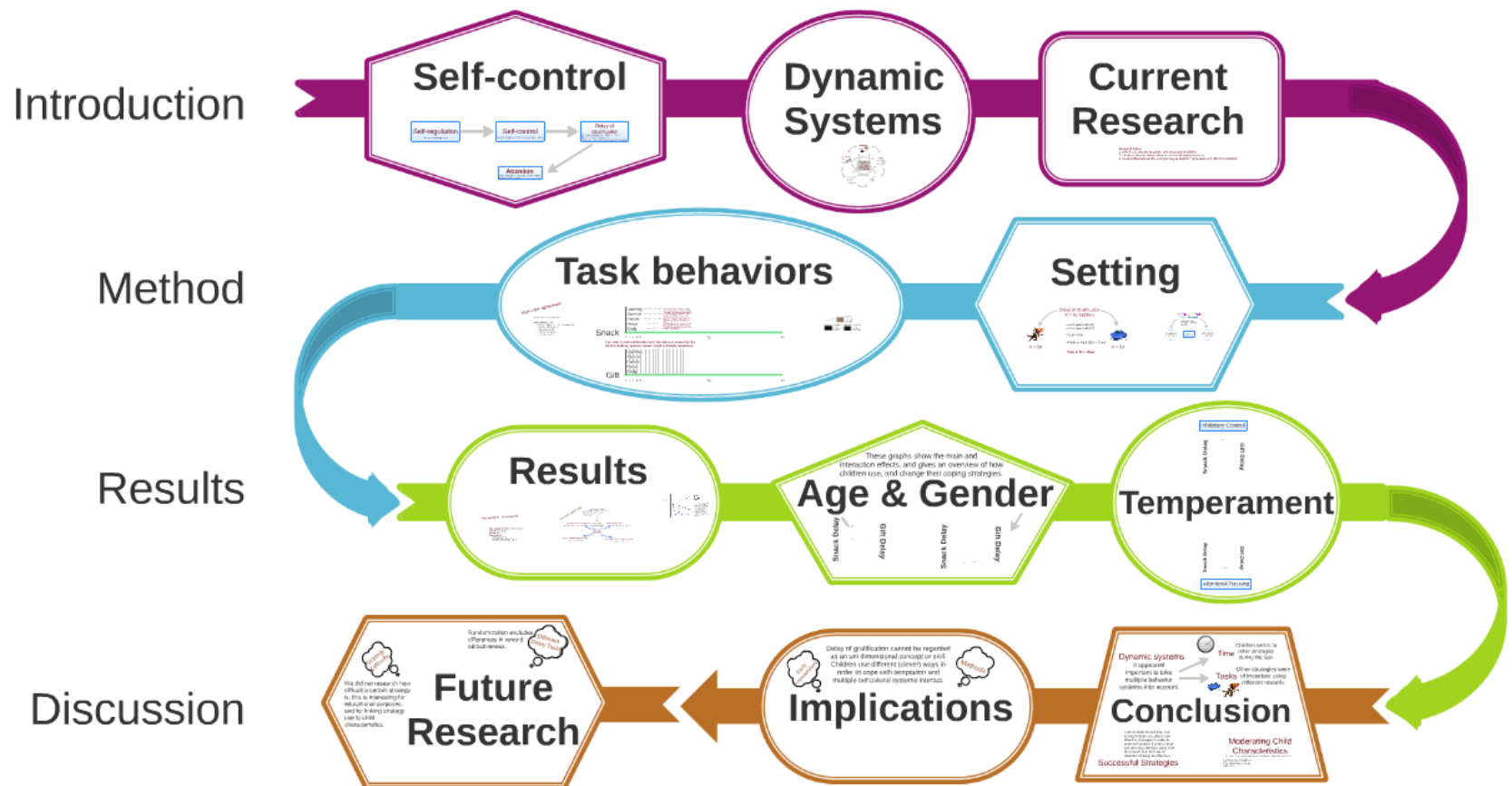


Dynamics of Self-Control during Delay of Gratification in Two- and Three-Years Old Toddlers

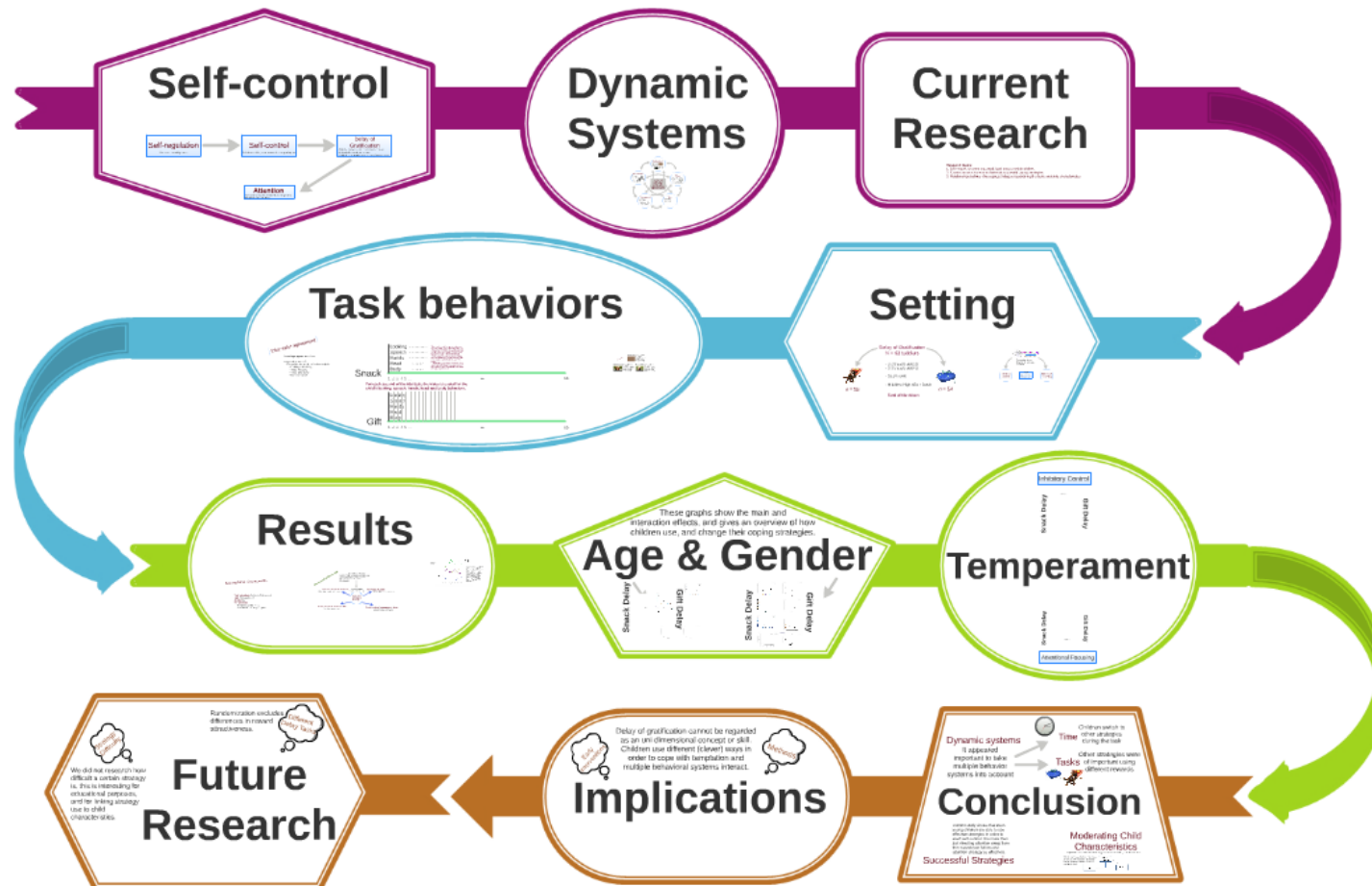


*Heleen van Ravenswaaij, Hanna Mulder, Josje Verhagen & Paul Leseman
Utrecht University*



Dynamics of Self-Control during Delay of Gratification in Two- and Three-Years Old Toddlers

Introduction



Discussion

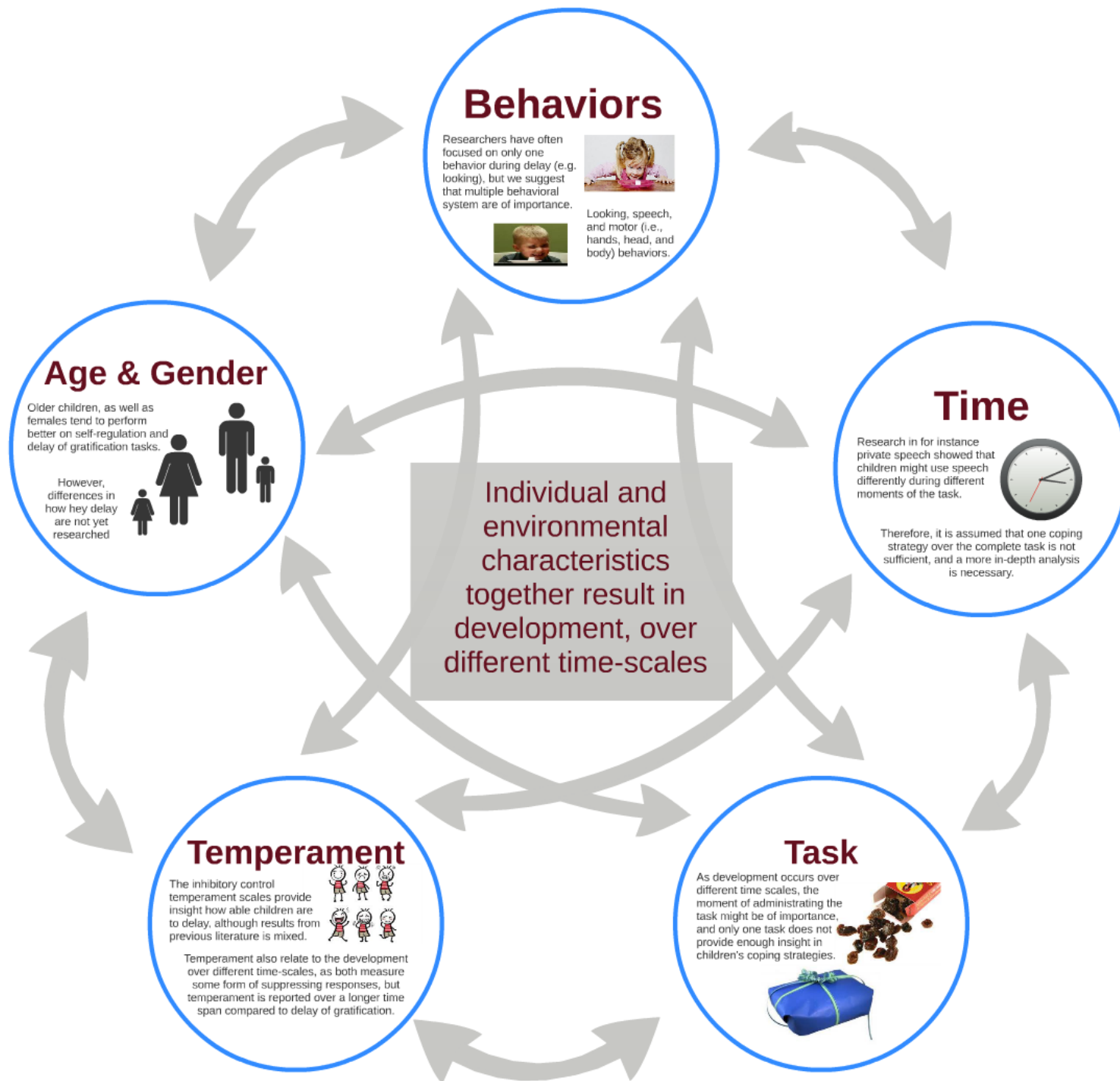
Heleen van Ravenswaaij, Hanna Mulder, Josje Verhagen & Paul Leseman
Utrecht University

Self-control



Dynamic Systems





Task

As development occurs over different time scales, the moment of administering the task might be of importance, and only one task does not provide enough insight in children's coping strategies.



Behaviors

Researchers have often focused on only one behavior during delay (e.g. looking), but we suggest that multiple behavioral systems are of importance.



Looking, speech, and motor (i.e., hands, head, and body) behaviors.



Time

Research in for instance private speech showed that children might use speech differently during different moments of the task.



Therefore, it is assumed that one coping strategy over the complete task is not sufficient, and a more in-depth analysis is necessary.

Age & Gender

Older children, as well as females tend to perform better on self-regulation and delay of gratification tasks.

However,
differences in
how they delay
are not yet
researched



Temperament

The inhibitory control temperament scales provide insight how able children are to delay, although results from previous literature is mixed.



Temperament also relate to the development over different time-scales, as both measure some form of suppressing responses, but temperament is reported over a longer time span compared to delay of gratification.

Current Research


Research topics:

1. Differences between successful and unsuccessful toddlers
2. Cluster analysis in order to derive at successful coping strategies
3. Relationships between the coping strategies used during the tasks and child characteristics

Conclusion

Research

Research topics:

1. Differences between successful and unsuccessful toddlers
 2. Cluster analysis in order to derive at successful coping strategies
 3. Relationships between the coping strategies used during the tasks and child characteristics
- 

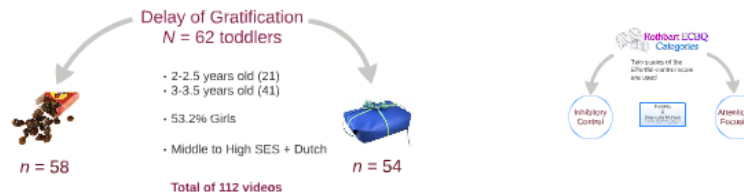
tems

Research

Research topics:

1. Differences between successful and unsuccessful toddlers
2. Cluster analysis in order to derive at successful coping strategies
3. Relationships between the coping strategies used during the tasks and child characteristics

Setting

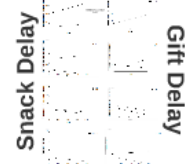


These graphs show the main and
n effects, and gives an overview of how
use, and change their coping strategies.

& Gender

Temperament

Inhibitory Control



Delay of Gratification $N = 62$ toddlers

- 2-2.5 years old (21)
- 3-3.5 years old (41)
- 53.2% Girls
- Middle to High SES + Dutch

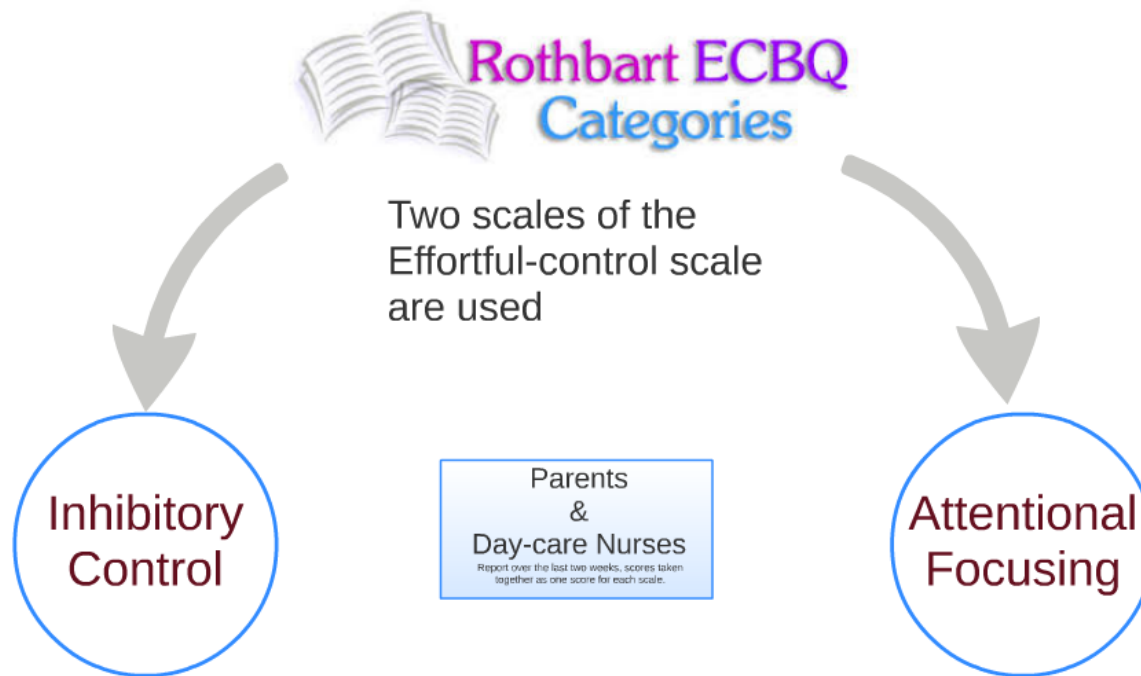
Total of 112 videos



$n = 58$



$n = 54$



Defined as the ability to restrain oneself on acting on impulse

Ability to inhibit a dominant response
Greatly linked to attention towards or away from the reward

Attention

Attention away from the reward facilitates longer delay time (Thies & Mischel, 1978)



Task behaviors

Inter-rater agreement

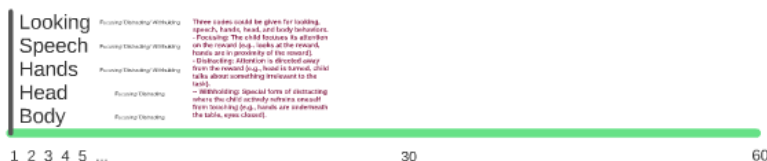
Percentage agreement > 83%

Kappa sufficient > .65

Except for (deleted from further analysis):

- Looking Withholding
- Verbal Focusing
- Verbal Distracting
- Does not speak

Snack



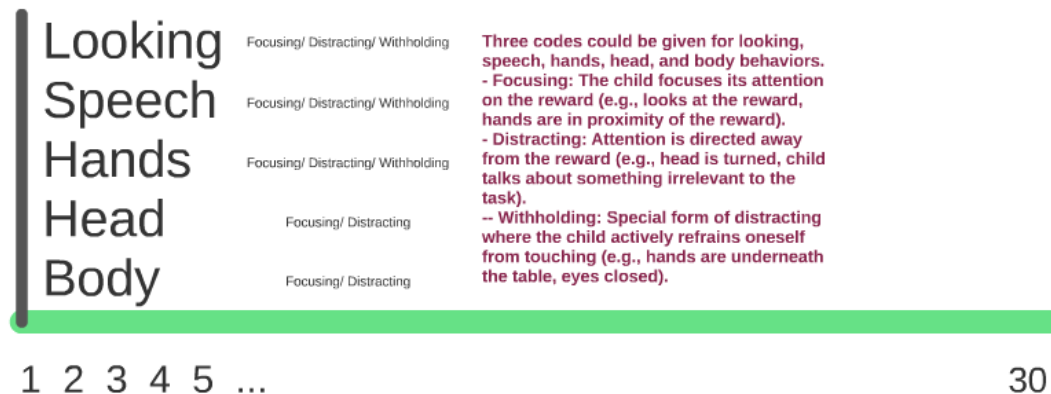
Gift



Results

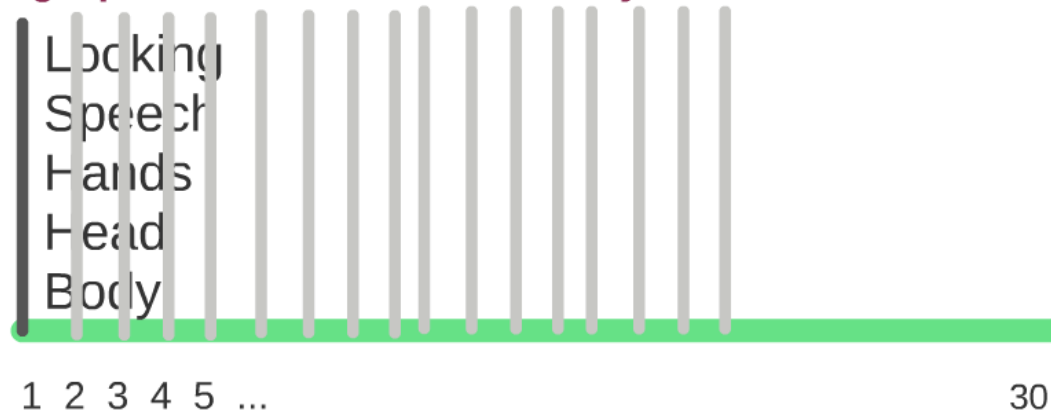
These graphs show interaction effects, and

Snack



For each second of the 60s task, the video is coded for the child's looking, speech, hands, head and body behaviors.

Gift



Looking
Speech
Hands
Head
Body

Focusing/ Distracting/ Withholding

Focusing/ Distracting/ Withholding

Focusing/ Distracting/ Withholding

Focusing/ Distracting

Focusing/ Distracting

Three codes could be given for looking, speech, hands, head, and body behaviors.

- Focusing: The child focuses its attention on the reward (e.g., looks at the reward, hands are in proximity of the reward).
- Distracting: Attention is directed away from the reward (e.g., head is turned, child talks about something irrelevant to the task).
- Withholding: Special form of distracting where the child actively refrains oneself from touching (e.g., hands are underneath the table, eyes closed).

1 2 3 4 5 ...

Second of the 60s task, the video is coded for th

[Examples]

Focusing



Eyes: Focusing
Speech: ?
Hands: Focusing
Head: Focusing
Body: Focusing

Combination



Eyes: Withholding
Speech: ?
Hands: Withholding
Head: Distracting
Body: Focusing

Distracting



Eyes: Distracting
Speech: ?
Hands: Distracting
Head: Distracting
Body: Distracting

[Inter-rater agreement]

Percentage agreement > 83%

Kappa sufficient > .65

Except for (deleted from further analysis):

- Looking Withholding
- Verbal Focusing
- Verbal Distracting
- Does not speak

Results

Successful vs. Unsuccessful

Behaviors Failure in first seconds
Three-years old
er n.s.

Successful children only

Mplus Cluster Analyses

- Snack and Gift separately, as previous test showed differences between the task.
- BIC and chi-square (difference)
- Interpretation

Complete Attention Disengagement
All attention away from the reward

Same result for
snack and gift delay

Full Reward Attention
All attention towards the reward

**Successful
Attentional
Strategies**

[Successful vs. Unsuccessful]

Task behaviors Failure in first seconds

Age Three-years old

Gender n.s.

Temperament:

Inhibitory Control = n.s.

Attentional Focusing = Higher

Successful children only

Mplus Cluster Analyses

- Snack and Gift separately, as previous test showed differences between the task.
- BIC and chi-square (difference)
- Interpretation



Successful Attentional Strategies

Complete Attention Disengagement

All attention away from the reward

Same result for
snack and gift delay

Full Reward Attention

All attention towards the reward

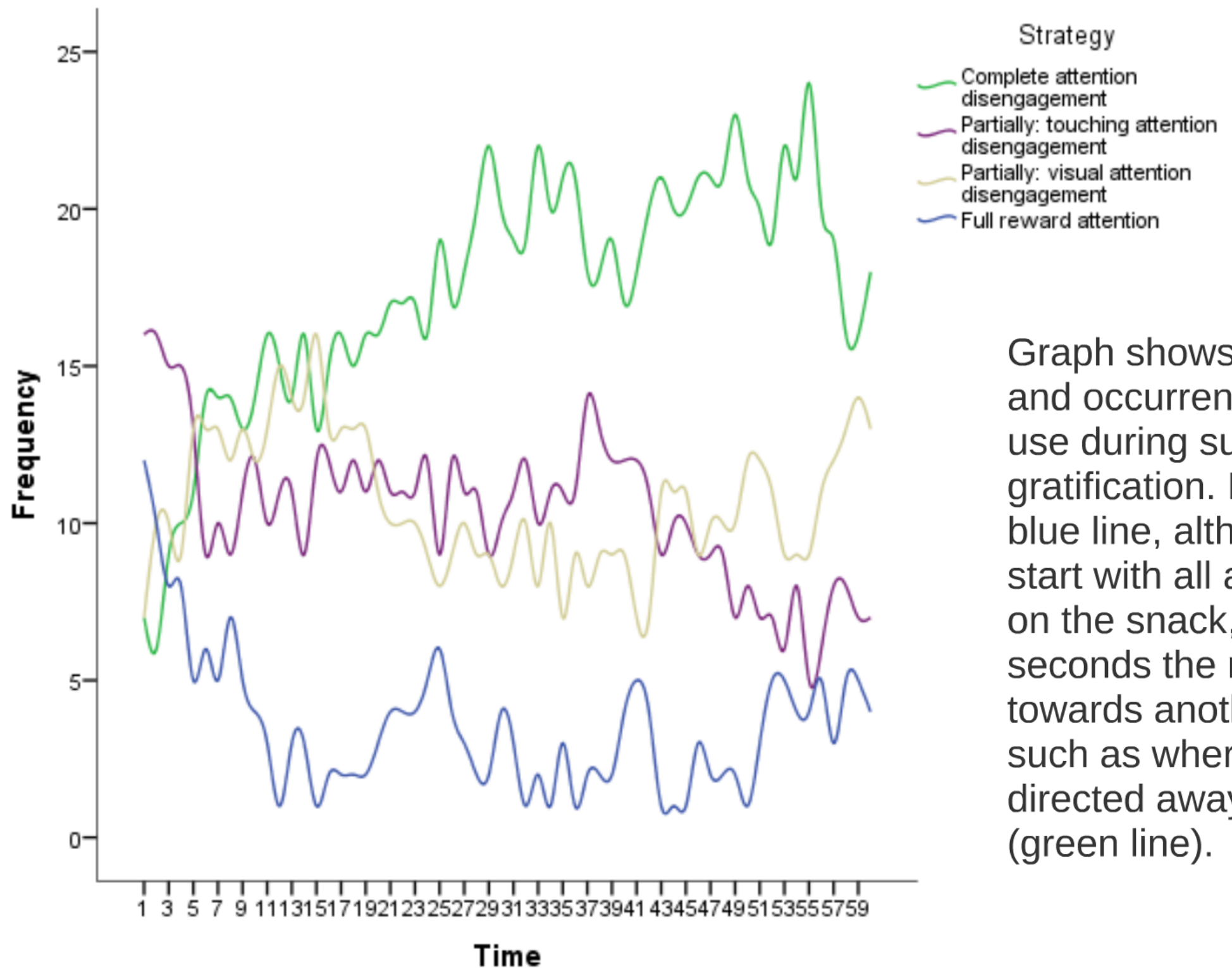
Partial Attention Disengagement: Eyes

Attention away with eyes

Partial Attention Disengagement: Hands

Attention away with hands

k



Graph shows the frequency and occurrence of four attention strategies during successful and unsuccessful trials. The green line, although it starts with all attention on the snack, within seconds the majority of attention is directed away from the snack (green line).

These graphs show the main and interaction effects, and gives an overview of how children use, and change their coping strategies.

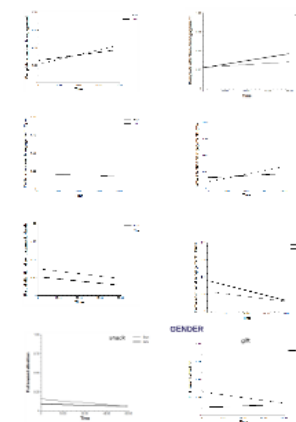
Age & Gender

Snack Delay

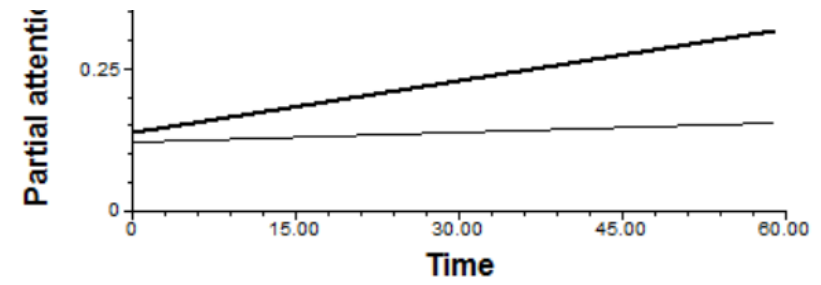
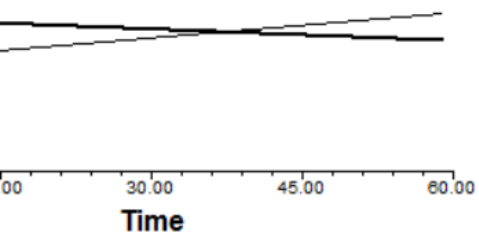


Gift Delay

Snack Delay

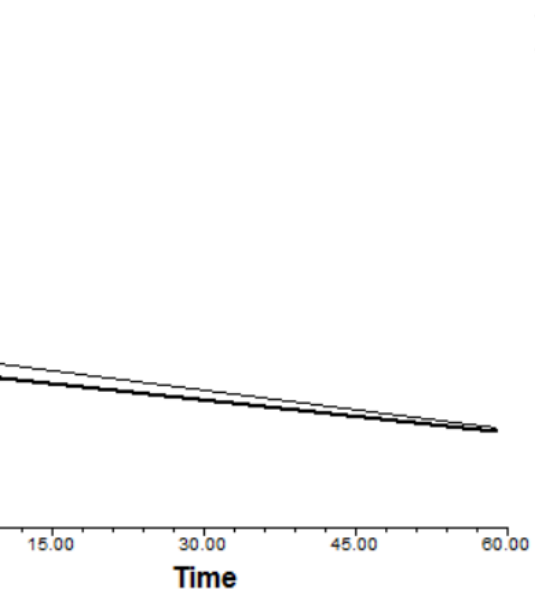


Gift Delay

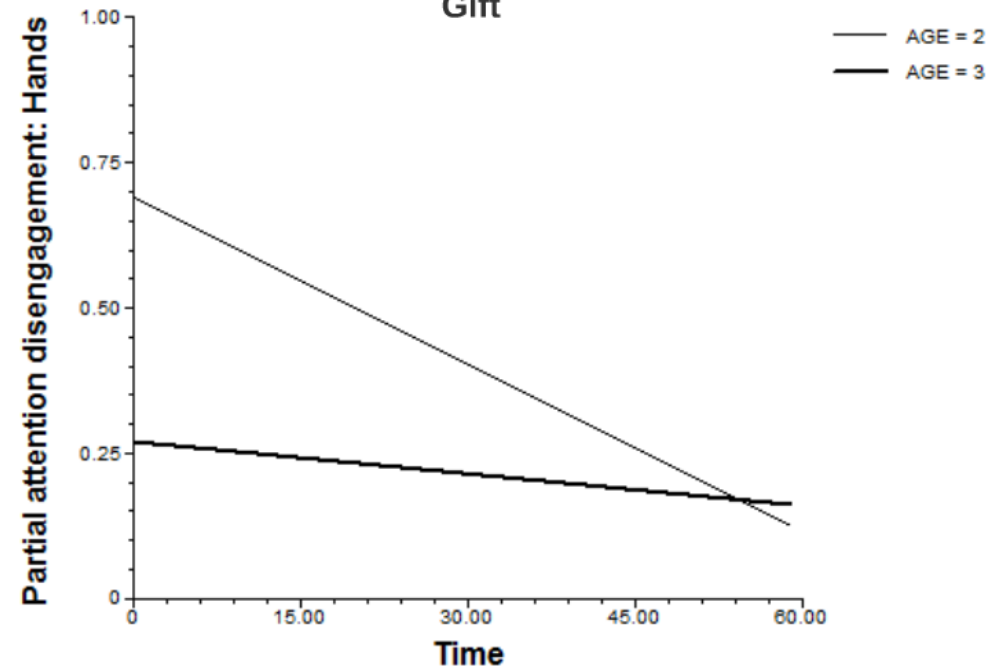


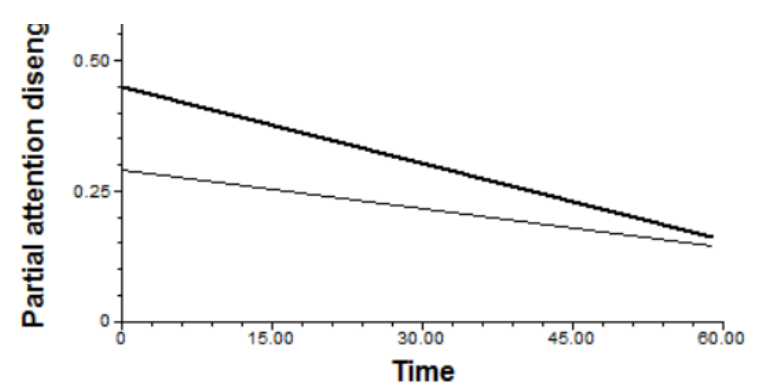
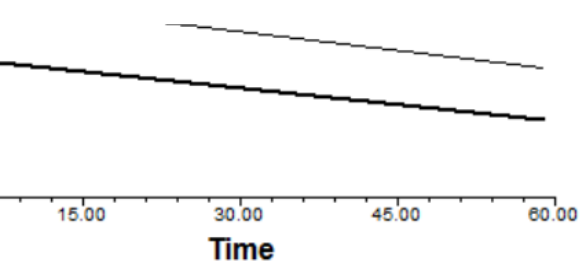
AGE

Snack



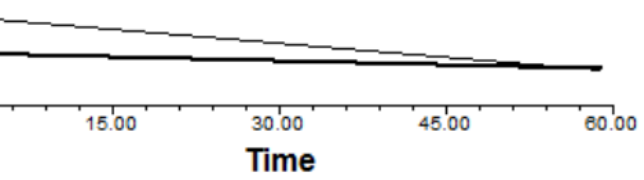
Gift





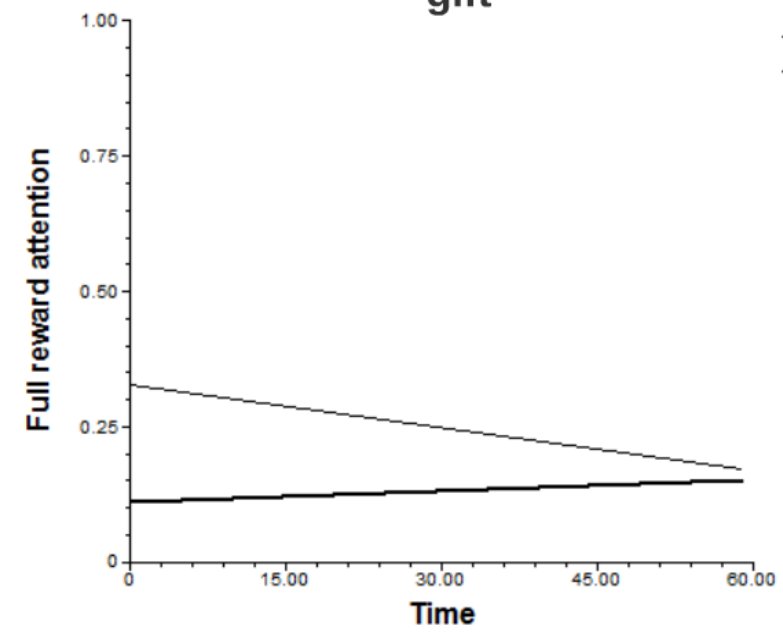
GENDER

snack — Boys
— Girls

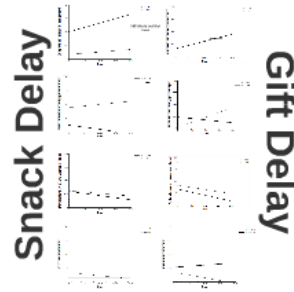


gift

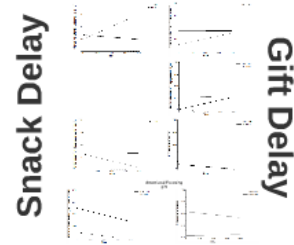
Boys = 0
Girls = 1



Inhibitory Control

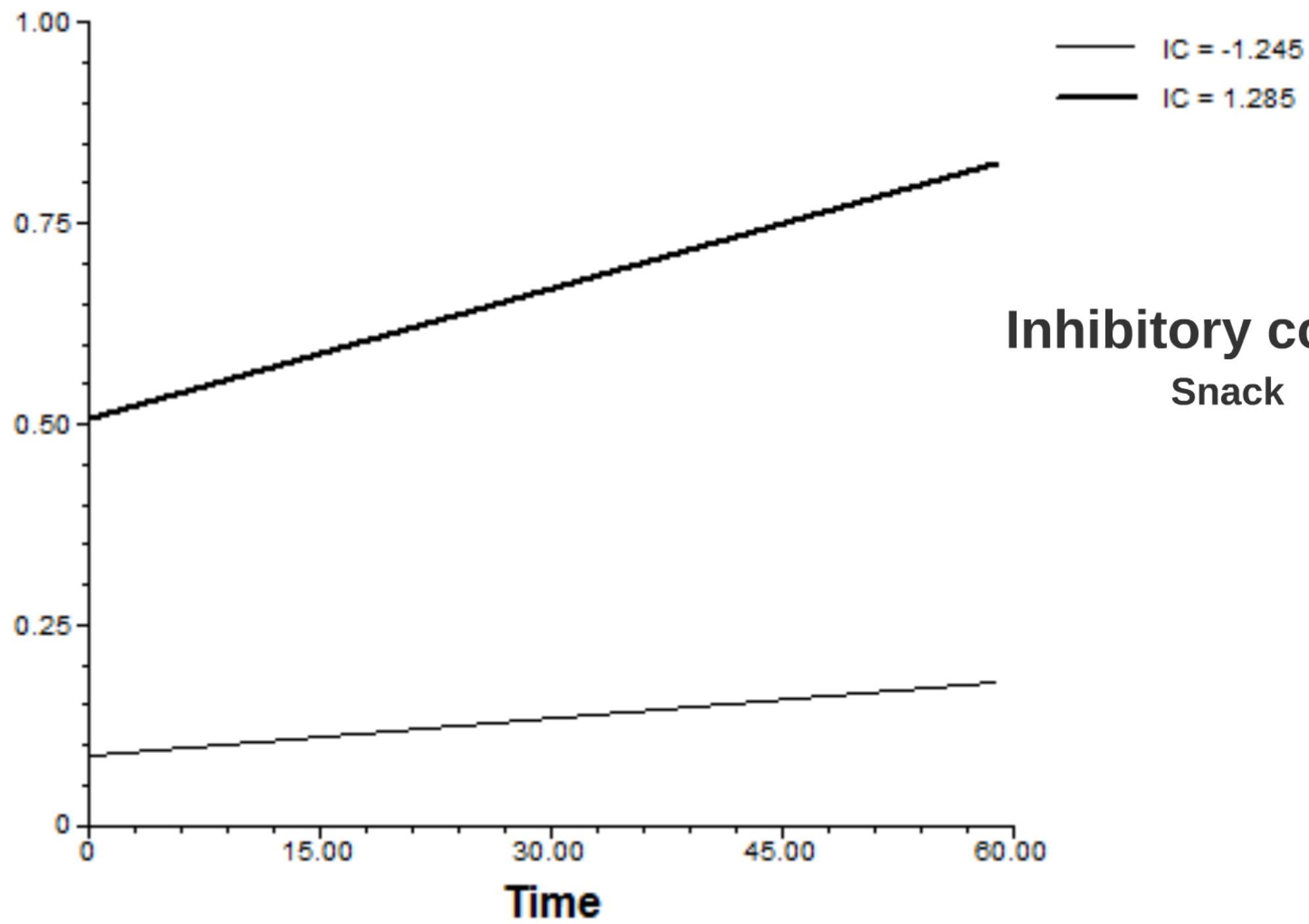


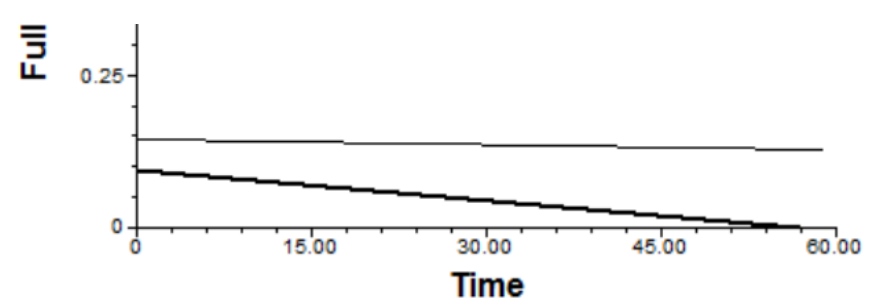
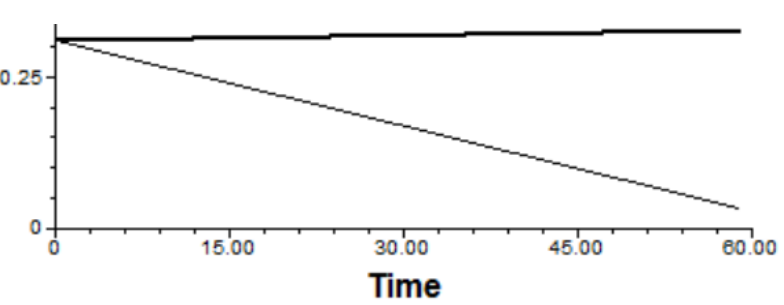
Temperament



Attentional Focusing

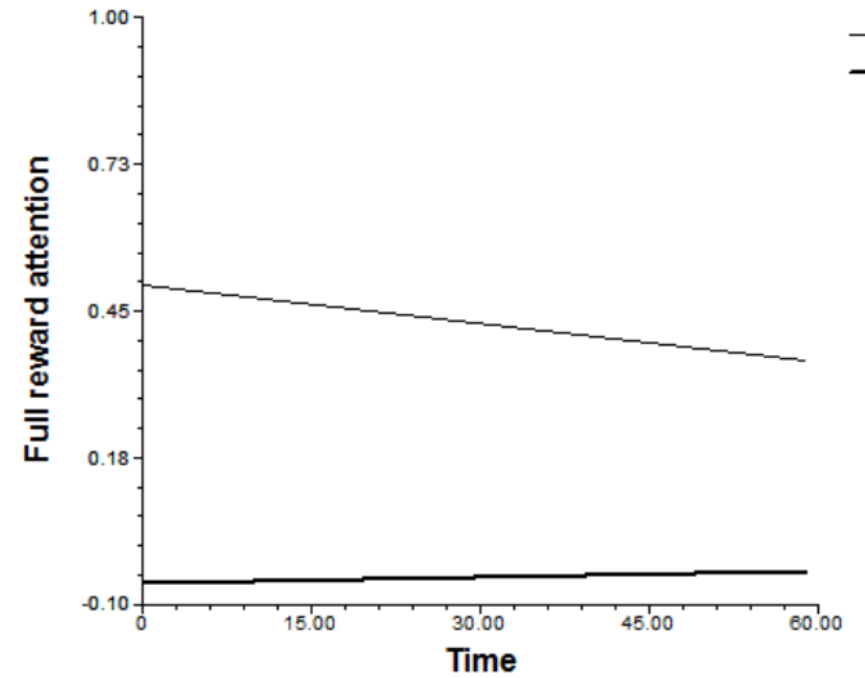
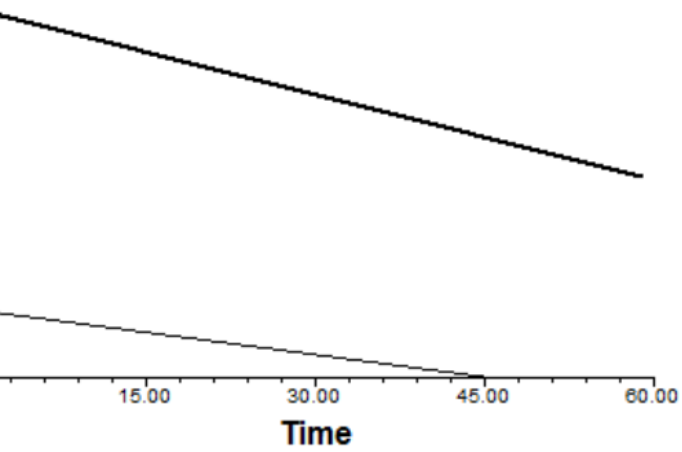
Complete attention disengagement





Attentional Focusing gift

— AF = -0.923
— AF = 0.944





Dynamic systems

It appeared important to take multiple behavior systems into account



Time

Children switch to other strategies during the task

Tasks



Other strategies were of important using different rewards

Conclusion



Successful Strategies

Current study shows that even young children are able to use effective strategies in order to exert self-control. It is more than just directing attention away from the reward (see full reward attention strategy as effective).

Moderating Child Characteristics

Explanation of the differences in strategy use are the moderating child characteristics.

This study showed that the child's age, gender, and temperament differently affect the relation between time and coping strategy.



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Moderating Child



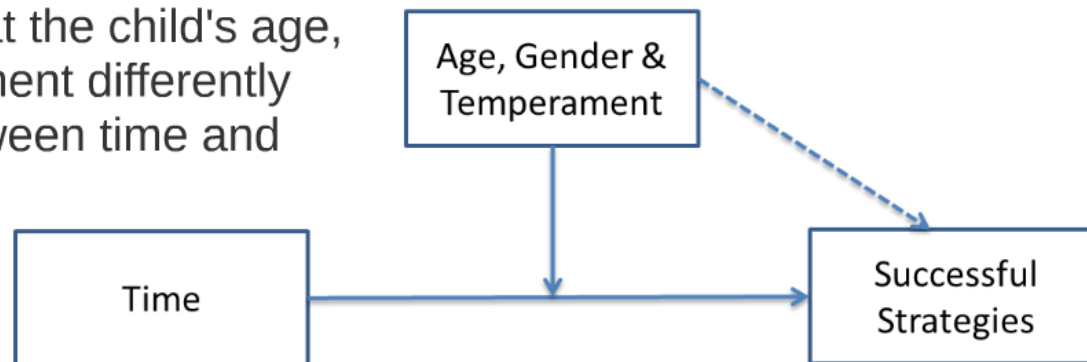
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Successful Strategies

Moderating Child Characteristics

Explanation of the differences in strategy use are the moderating child characteristics.

This study showed that the child's age, gender, and temperament differently affect the relation between time and coping strategy.





Delay of gratification cannot be regarded as an uni dimensional concept or skill. Children use different (clever) ways in order to cope with temptation and multiple behavioral systems interact.



Implications



We did not research how difficult a certain strategy is, this is interesting for educational purposes, and for linking strategy use to child characteristics.

Randomization excludes differences in reward attractiveness.



Future Research

